



NWQMC

NATIONAL WATER QUALITY
MONITORING COUNCIL

Working Together for Clean Water

Water Information Strategies Work Group

From Data to Information to Action

The Water Information Strategies Partnership

The National Water Quality Monitoring Council (Council) promotes goal-oriented monitoring to meet the information needs of multiple users. To help achieve this goal, the work group defines objectives and strategies for developing sample designs; examines techniques for data storage and retrieval; and considers effective methods for data analysis, interpretation and reporting. Specific objectives are to:

- Examine the evolving nature of water quality management in the United States, which results in changing expectations about information needs;
- Create guidance on monitoring design that connects the information produced by monitoring programs to current and long-term questions of management.

Activities of the work group focus on the development of strategies to meet these objectives:

- Articulate information goals of water quality management in ways that facilitate design of monitoring programs;
- Benchmark current monitoring system design efforts;
- Coordinate with other groups working toward similar monitoring design objectives both nationally and internationally;
- Develop guidance on monitoring system design for the monitoring community.

The work group is a partnership of water quality experts drawn from federal, tribal, state, interstate, municipal and local governments; private industry; universities; and professional water organizations. Members are drawn from all geographic areas of the United States, with a wide variety of technical and administrative experience related to monitoring system design, data analysis, and data management.

Products and Plans

Use of Data Analysis Methods in Water Quality. Work group members surveyed the use of statistical data analysis methods currently applied to water quality monitoring data, including peer-reviewed publications. The research examined:

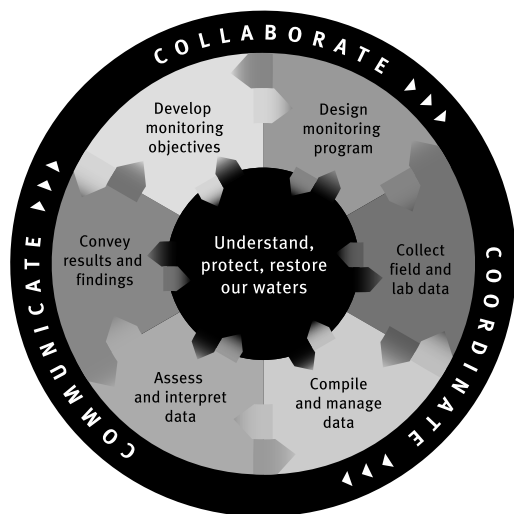
- Data analysis methods currently employed to analyze water quality monitoring data;
- Criticisms of the methods as currently employed;
- How the selection of methods to analyze water quality data can impact the comparability of information used for water quality management purposes; and
- Options by which data analysis methods employed in water quality management can be made more transparent and auditable.

The Council's Technical Report 01.01 is available at the following Web site:

<http://water.usgs.gov/wicp/acwi/monitoring/pubs/tr/nwqmc0101.pdf>

The report concludes that application of science, individually administered, limits acquisition of comparable water quality information. There are too many variables involved and too many methods through which to explore and analyze data. Nevertheless, if management requires accepted, scientifically defensible methods that produce comparable results upon which to base decisions, consensus about which methods should be employed is highly desirable. Several documents have been developed that describe standard methods for sampling protocols and laboratory analysis. Following this trend, it seems only natural to develop standardized methods of data analysis as well. It must be mentioned that such suggestions should only apply to methods used for management decision-making. Exploratory data analysis employed by researchers must remain untethered and flexible.

Framework for Monitoring. The Council used a collaborative approach to develop a graphic to illustrate the process of water quality monitoring. The Water Information Strategies Work Group assembled detailed explanations of each “cog” in the “wheel” of the framework. Published by the American Water Resources Association in their *IMPACT* magazine, the papers provide a perspective of monitoring that moves the entire monitoring community toward more consistency and comparability.



See *American Water Resources Association (AWRA) IMPACT*, September 2003 issue, Vol. 5, No. 5. See also *Council Fact Sheet* “A Framework for Water Quality Monitoring.”

This work group focuses on the three cogs that involve:

- Identifying information objectives,
- Compiling and managing data, and
- Assessing and interpreting data.

The group is concerned with carefully connecting the information goals of a monitoring program to its information products via strategic planning and design of water quality monitoring systems.

Task Force on Information Infrastructure. The Water Information Strategies Work Group is developing a Task Force on Information Infrastructure to explore, develop, and document methods to:

- Enter data into databases;
- Share data among databases and across data models; and,
- Provide easy, real-time access to coordinated databases.

In addition, the Task Force will examine whether it is feasible to:

- Develop tools to design and implement monitoring programs and seamlessly move data and information around the monitoring framework; and,
- Initiate, in coordination with the Methods and Data Comparability Board, the development of an expert system to organize the design and evaluation of water quality monitoring programs.

About the NWQMC

The National Water Quality Monitoring Council (Council) provides a national forum to coordinate consistent and scientifically defensible methods and strategies for improving water quality monitoring, assessment, and reporting. The Council promotes partnerships that foster collaboration, advance the science, and improve management within all elements of the water quality monitoring community. A vital aspect of this role is fostering increased understanding and stewardship of our water resources.

The Council was created in 1997 as a vehicle for bringing together the diverse expertise, skills, and talents needed to develop collaborative, comparable, and cost-effective approaches to water quality monitoring. The Council's 35 members represent federal, tribal, state, interstate, local, and municipal governments; watershed and environmental groups; the volunteer monitoring community; universities; and the private sector, including the regulated community. These members meet several times a year in locations throughout the country. The Council is organized into work groups whose activities and products advance its goals. Current work groups are *Water Information Strategies*, *Methods and Data Comparability Board*, *Watershed Components Interactions*, and *Collaboration and Outreach*.

The Council is co-chaired by the U.S. Geological Survey and the U.S. Environmental Protection Agency. It is a subgroup of the Advisory Committee on Water Information that is chartered under the Federal Advisory Committee Act.

Additional information can be obtained through the National Water Quality Monitoring Council's Web site at:

<http://water.usgs.gov/wicp/acwi/monitoring/>

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